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COMPLETE SPECIFICATION

NO DRAWINGS

Safety Cigarette

I, ERIC FREDERICK BAXTER (British), 159 Earlham Road, Norwich, Norfolk, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The filter and/or cigarette tip or cigarette incorporates one or more bands, rings, lines or marks manufactured from noncombustible material, that is, material which is virtually unsmokable, or difficult or unpleasant to smoke. They may be formed by any means, such as foil or metallic strip, print, paint, cork, chemical, extra thicknesses of paper, coloured or otherwise. An adhesive band proves satisfactory. This could be transparent. A word or brand name or band or bands may be printed or formed. A simple means of controlling the length of cigarette which may be smoked is by the rolling of card of suitable thickness and width around the tobacco before wrapping. The card forms a slight constriction at the desired point. There are a number of suitable materials which could be used. An additional or alternative method would be to make use of the wrapping paper. A metal band interleaved between layers of paper or rolled in between the card and paper or used externally may be used or the band may be held in place by use of adhesives or simply retained by the wrapper. Foil, treated paper, cork or card or other material may be found to be suitable. The constricting card band may be fed into the tobacco rollers before wrapping or may be included in the wrapping operation. This should not present any difficulties as the rollers will compress the card to the diameter of the cigarette which will enable the cigarette to be wrapped without leaving a bulge at this point.

A further alternative or additional method

[Price 4s. 6d.]

would be to feed small additional filters chemically treated or otherwise into the rollers at the desired point. This in effect forms a filter, a filter of the same or different construction at both ends with tobacco. However this may only be found to be practicable with slower types of manufacture as hopper or other means of dropping the filter into position may cause manufacturing difficulties. Alternatively a filter may be manufactured with a long centrally placed filter section and tobacco and bisected. It is also desirable that the co-operation of the smoker be encouraged. This may be done by printing a band or mark or word or words or any combination on the stub end or ends of the cigarette wrapper, the exact position of the line, which must be acceptable to the smoker, must be decided by experimentation in the laboratory and consultation with marketing experts. The approximate position in the case of standard size cigarettes would be  $1\frac{1}{2}$  to  $1\frac{3}{4}$  from the mouth piece end, and approximately pro rata with other size cigarettes.

Tobacco growers are continually experimenting and producing new kinds of leaf. Consequently it will, in all probability, be found necessary to alter the position of the band from time to time.

A report published in 1962 by the Royal College of Physicians entitled "Smoking And Health" brought to the public attention the very great dangers of smoking and in particular cigarette smoking. Evidence contained in the report confirmed that the stub is the most dangerous part of the cigarette.

I acknowledge with thanks, permission from the Royal College of Physicians to reprint extracts from the report.

The need for preventative measures.

Reduction in general air pollution should reduce the risks of cigarette smoking; but it

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printed band, or bands, or words, or marks, or any combination thereof, on the stub end or ends of the cigarette wrapper, the exact position of the line, which must be acceptable to the smoker, must be decided by experimentation in the laboratory and consultation with marketing experts.

is necessary for the health of the people in Britain that any measures that are practicable and likely to produce beneficial changes in smoking habits shall be taken promptly.

#### 5 Preventative measures.

Since it is not yet possible to identify those individuals who will be harmed by smoking, preventative measures must be generally applied. The harmful effects of cigarette smoking might be reduced by efficient filters, by using modified tobaccos, by leaving longer cigarette stubs.

#### Prospective Surveys.

The results of retrospective studies have been fully confirmed by prospective studies in which, first, the smoking habits of a defined population group have been ascertained, and then the causes of death during several years' observation have been recorded. Four independent groups in three countries have conducted investigations of this sort. They all show a steady increase in numbers of deaths from lung cancer with increasing cigarette consumption, and are in close quantitative agreement not only with each other but also with most of the retrospective studies. The rather higher mortality found in the British study compared with the American studies, may be explained partly by the observation that the British smoke more of each cigarette than the Americans, thus receiving a larger dose of smoke and losing the filtration effects of a long stub.

#### Filtration of smoke.

It is probable that all the particles in a cloud of tobacco smoke have the same chemical composition so that selective removal by filtration of particular compounds which might be specially toxic does not seem practicable. Plugs made of finest tissue paper or synthetic fibres retain a variable proportion of the smoke particles that are drawn through them. So, of course, does the unsmoked tobacco in the stub of the cigarette, more effectively indeed, than some special filters. A filter plug could be made which would retain all the smoke. In practice the degree of efficiency is limited by what is acceptable to the smoker in terms of flavour and draw resistance, for the greater the efficiency of the filter the greater the resistance to air flow.

Cigarettes with increasing filtration efficiency are being introduced in the U.S.A. At first they met with serious sales resistance but there is now evidence of a wider acceptance of more efficient filtration. In recent years there has been a great increase in sales of filter-tipped cigarettes in Britain. Present day filters have a greater filtration efficiency than the corresponding length in a plain cigarette. About 18% of smoke particles are retained in a cigarette stub of average length (18 mm) whereas 25% was the average retention by the filter alone from 20 repre-

sentative brands. Comparison of the amount of smoke or tar condensed from various tipped and plain brands is lower. Since filters vary in efficiency, it would be most desirable to have them tested by some official agency and to have the result of the test indicated on the packet so that the purchaser could distinguish a more from a less efficient filter.

It should be realised that since we cannot identify the substances in tobacco smoke that may be injurious to health, no firm claims for the safety of modified cigarette tobaccos or filters can be made. It would, of course, be many years before it would be possible to detect any effect upon death rates resulting from the use of cigarettes with filter tips, or of modified tobaccos. A reduction in the prevalence of smokers among those who had used such cigarettes or tobaccos might give early evidence of a beneficial effect.

#### Adoption of Safer Smoking Habits.

The unburnt part of a cigarette acts as a filter so that as the cigarette burns down, smoke condensed in the second part is redistilled. Thus the smoke from the second half contains a higher and steadily rising concentration of potentially toxic substance than the smoke of the first half. Some means of persuading cigarette smokers to stub out their cigarettes before the second half was burnt would almost certainly reduce the risk. This might be more practicable for confirmed smokers than complete abandonment of the habit.

The findings of The Royal College of Physicians make it quite clear that the most dangerous part of a cigarette is the stub. A large number of smokers, for reasons of economy, habit, forgetfulness or the need to get the most out of each and every cigarette, smoke cigarettes to a very small stub. Some form of compulsion is obviously needed and that is what one feature of this invention does. It controls the length of cigarette which may be smoked. In conjunction with the filters described it provides the smoker with a cigarette with a reduced cancer risk.

#### WHAT I CLAIM IS:—

1. A cigarette incorporating a device which controls and/or indicates the length of cigarette which is considered desirable that the smoker may smoke, the device consisting of a length of card or other suitable material wrapped around the tobacco at a suitable point, i.e. approximately  $1\frac{1}{4}$ - $1\frac{1}{2}$ " from the mouth end in the case of standard cigarettes and approximately pro rata with other size cigarettes, forming a slight constriction and/or a printed band or bands or mark or marks, broken, dotted or wavy lines encompassing all or part of the cigarette.
2. A cigarette as claimed in claim 1 where an external band of transparent or other material and formed by any means, 130

foil, cork, chemical, extra thicknesses of paper, metallic strip coloured or otherwise is employed to produce the desired result.

3. A cigarette as claimed in claim 1 where a foil or metallic strip band coloured or otherwise is interleaved in the cigarette wrapping paper.

4. A cigarette as claimed in claim 1 where the length of cigarette which may be smoked is controlled by an extra long standard or multi stage filter tip and of any type of construction.

5. A cigarette as claimed in claim 1 where the length of cigarette is controlled by a filter tip inserted in the cigarette at the desired point chemically treated or otherwise.

6. A cigarette as claimed in claim 1 where filters are made up with tobacco and the filter plug is used as a means of controlling the length of cigarette which may be smoked leaving a plug or tobacco at the other end.

7. A cigarette as claimed in claim 1, where a printed band or bands, mark or marks, broken, dotted or wavy lines forming word or brand or otherwise indicates the length of cigarette which is considered desirable that the smoker may smoke.

8. Cigarette paper when used in making a cigarette as claimed in claim 1, cut for use in individual machines incorporating a band or bands, mark or marks as claimed in claim 7.

9. A cigarette as claimed in claim 7 where the printed ring, band, line or mark is incorporated at both ends of the cigarette.

10. Cigarette paper, when used in making a cigarette as claimed in claim 1, cut for use in individual machines as claimed in claim 8 where the printed ring, band, line or mark is incorporated at both ends of the cigarette.

11. A cigarette as claimed in any of the preceding claims 1-7 or 9 which is wrapped in cigar leaf or other material.

12. A cigarette as claimed in any of the preceding claims which has been medicated with menthol or the like.

13. Cut strips of card, when used in making a cigarette as claimed in claim 1,

or other suitable material, non combustible or otherwise, for use as inserts with individual machines to enable a cigarette to be produced where the length which can be smoked may be controlled.

14. Cut strips or reels of foil, paper, card or other suitable material with a gummed or adhesive edge, when used in making a cigarette as claimed in claim 1, for use as external bands with individual machines to enable a cigarette to be produced where the length of cigarette which may be smoked is controlled and/or indicated.

15. Cigarette paper or other cigarette wrapping material with a printed band or bands, mark or marks, broken, dotted or wavy lines forming a word or brand or otherwise, when used in making a cigarette as claimed in claim 1, which indicates the length of cigarette which is considered desirable that the smoker may smoke on the gummed side of the paper thus facilitating the correct placing of a plug or filter or other means of controlling the length of cigarette which may be smoked.

16. Cigarette paper marked on both sides as claimed in claims 7 and 15 when used in making a cigarette as claimed in claim 1.

17. A cigarette incorporating the inserts as claimed in claim 13.

18. A cigarette incorporating the insert bands as claimed in claim 14.

19. Cigarette paper as claimed in claim 15 where the band or marks are printed at both ends of the wrapping paper, when used in making a cigarette as claimed in claim 1.

20. Cigarette paper as claimed in claims 7 and 15, when used in making a cigarette as claimed in claim 1, marked on both sides and both ends.

21. A cigarette as claimed in claim 1 where the paper or wrapping material is marked on both sides and both ends.

22. Cigarette paper or other wrapping material as claimed in claim 15 or 16 when used in making a cigarette as claimed in claim 1 where the paper or wrapping material is marked on both sides and both ends.

E. F. BAXTER.